Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of claims:

1. (Previously amended) A method of forming a planar waveguide structure, comprising:

forming a first graded layer on a substrate, the first graded layer comprising silicon and germanium wherein the germanium concentration increases with the height of the first graded layer; and

forming a second graded layer immediately over the first graded layer, the second graded layer comprising silicon and germanium wherein the germanium concentration decreases with the height of the second graded layer.

2. (Original) The method of claim 1 further comprising forming a blocking layer between the substrate and the first graded layer wherein the blocking layer prevents contaminants from the substrate from diffusing into the first or the second graded layers.

3. (Original) The method of claim 2 wherein the blocking layer comprises epitaxial silicon.

4. (Original) The method of claim 1 further comprising forming a cladding layer on the second graded layer.

5. (Original) The method of claim 4 wherein the cladding layer comprises epitaxial silicon.

6. (Original) The method of claim 1 wherein the germanium concentration in the first graded layer increases linearly.

7. (Original) The method of claim 1 wherein the germanium concentration in the graded layer increases from about 0% germanium to about 2-5% germanium at a rate between about 0.1% per μm to about 10% per μm.

8. (Original) The method of claim 1 wherein the germanium concentration in the first graded layer increases from about 0% germanium to about 2% germanium at a rate of about 10 % per μm.

9. (Original) The method of claim 1 wherein the germanium concentration in the second graded layer decreases linearly.

10. (Original) The method of claim 1 wherein the germanium concentration in the second graded layer decreases from about 2-5% germanium to about 0% germanium at a rate between about 0.1% per μm to about 10% per μm.

11. (Original) The method of claim 1 wherein the germanium concentration in the second graded layer decreases from about 2% germanium to about 0% germanium at a rate of about 10% per μm.

12. (Original) The method of claim 1 wherein the layers are formed by a chemical vapor deposition process.

13. (Original) The method of claim 12 wherein the layers are formed epitaxially.

14. (Original) The method of claim 12 wherein the chemical vapor deposition process is a low pressure chemical vapor deposition process.

15. (Currently amended) The method of claim ~~13~~ 1 wherein the planar waveguide structure is formed using a selective deposition technique.

16. (Currently amended) The method of claim ~~13~~ 12 wherein the chemical vapor deposition process comprises:

introducing into a deposition chamber a first source gas for forming silicon film on a substrate;

introducing into a deposition chamber a second source gas for forming SiGe film on a substrate; and

introducing H_2 into the deposition chamber while maintaining a determined pressure and temperature in the deposition chamber.

17. (Original) The method of claim 16 wherein the first source gas is silane, disilane, trisilane, dichlorosilane, or trichlorosilane.

18. (Original) The method of claim 16 wherein the second source gas is germane or digermane.

19. (Original) The method of claim 16 wherein the first source gas is silane and the second source gas is germane.

20. (Previously amended) The method of claim 16 wherein the chemical vapor deposition process for forming the first and second graded layers comprises:

controlling the flow rate of the second source gas according to a determined concentration profile of Ge on a substrate; and

forming a film on a substrate, the film comprising Ge at a first concentration at a first point in the film and a second concentration different from the first concentration at a second point in the film.

21. (Original) The method of claim 20 wherein the concentration profile is determined by:

determining a concentration of Ge formed on a substrate for a plurality of flow rates;

determining a growth rate of SiGe on a substrate for a second plurality of flow rates;

determining a concentration profile of Ge for a unit of time; and

controlling the flow rate to form film at a graded concentration of Ge throughout the thickness of the film.

22. (Original) The method of claim 1 further comprising:

forming a pattern on the first graded layer; and

etching the patterned first graded layer before forming the second graded layer on the first graded layer.

23-50. (Cancelled)

51. (Previously amended) A computer readable medium comprising executable program instructions that when executed cause a digital processing system to perform a method comprising:

forming a first graded layer on a substrate, the first graded layer comprising silicon and germanium wherein the germanium concentration increases with the height of the first graded layer; and

forming a second graded layer immediately over the first graded layer, the second graded layer comprising silicon and germanium wherein the germanium concentration decreases with the height of the second graded layer.

52. (Currently amended) The computer readable medium ~~method~~ of claim 51 wherein the executable program instructions include instructions for forming layers using a chemical vapor deposition process.

53. (Currently amended) The computer readable medium ~~method~~ of claim ~~51~~ 52 wherein the chemical vapor deposition process comprises executable program instructions for:

introducing into a deposition chamber a first source gas for forming silicon film on a substrate;

introducing into ~~a~~ the deposition chamber a second source gas for forming SiGe film on a substrate; and

introducing H_2 into the deposition chamber while maintaining a determined pressure and temperature in the deposition chamber.

54. (Currently amended) The computer readable medium ~~method~~ of claim 51 wherein the executable program instructions for forming the first and second graded layers comprises instructions for:

controlling the flow rate of the second source gas according to a determined concentration profile of Ge on a substrate;

forming a film on a substrate, the film comprising Ge at a first concentration at a first point in the film and a second concentration different from the first concentration at a second point in the film.

55. (Currently amended) The computer readable medium ~~method~~ of claim 54 wherein the executable program instructions for determining the concentration profile ~~comprises~~ comprise instructions for:

determining a concentration of Ge formed on ~~a~~ the substrate for a plurality of flow rates;

determining a growth rate of SiGe on ~~a~~ the substrate for a second plurality of flow rates;

determining a concentration profile of Ge for a unit of time; and

controlling the flow rate to form film at a graded concentration of Ge throughout the thickness of the film.

56. (Currently amended) The computer readable medium ~~method~~ of claim 51 wherein the executable program instruction include instructions for forming the layers epitaxially.

57-59. (Cancelled)

60. (Previously amended) A method of forming a planar waveguide structure, comprising:

forming a first graded layer on a substrate, wherein the first graded layer comprises a first and a second optical material, wherein the concentration of the first optical material and the index of refraction of the first graded layer increases with the height of the first graded layer; and

forming a second graded layer immediately over the first graded layer, the second graded layer comprising the first and second optical materials wherein the concentration of the first optical material and the index of refraction of the second layer decreases with the height of the second graded layer.

61. (Cancelled)